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EXAMINER

FOWLKES, ANDRE R

ART UNIT	PAPER NUMBER
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2122

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/762,607

Applicant(s)

ENDRES, RUDIGER

Examiner

Andre R. Fowlkes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. This action is in response to the amendment filed on 6/21/04.
2. The objections to the specification are been withdrawn, in view of applicant's amendment.
3. The objection to claim 13 is withdrawn, in view of applicant's amendment.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 7-9, and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith, U.S. Patent No. 5,129,080.

As per claim 1, Smith discloses enhancing the fault tolerance of software, the system comprising:

- **a control computer to control the distributed system software**, (col. 2 lines 4-8, "This invention provides a mechanism to organize the computer software in such a way that its recovery from failure ... occurs before the failure becomes operationally visible.", and col. 2 lines 25-34, "Each module is in fact two copies of the code and data-space ... one of the copies, called the Primary Address Space (PAS), maintains actual state data. The other copy (is) called the Standby Address Space (SAS) ... The

Availability Management Function (AMF) controls the allocation of PAS and SAS components to the processors. When the AMF detects an error, a SAS becomes PAS and the original PAS is terminated").

the control computer comprising:

- a memory to store control software and work data; the memory comprising a plurality of memory areas control software being allocated to at least two memory areas (col. 2 lines 25-34, "Each module is in fact two copies of the code and data-space ... one of the copies, called the Primary Address Space (PAS), maintains actual state data. The other copy (is) called the Standby Address Space (SAS) ... The Availability Management Function (AMF) controls the allocation of PAS and SAS components to the (separate memory areas)"),

- the control software of one of the at least two memory areas designated as active control software; the control software of other of the at least two memory areas designated as passive control software; wherein the control computer controls the distributed system using the active control software (col. 2 lines 4-8, "This invention provides a mechanism to organize the computer software in such a way that its recovery from failure ... occurs before the failure becomes operationally visible.", and col. 2 lines 25-34, "Each module is in fact two copies of the code and data-space ... one of the copies, called the Primary Address Space (PAS), maintains actual state data (i.e. runs the system, before s/w failures using the active control s/w). The other copy (is) called the Standby Address Space (SAS) ... The Availability Management Function (AMF) controls the allocation of PAS and SAS

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components to the processors. When the AMF detects an error, a SAS becomes PAS and the original PAS is terminated”).

As per claim 2, the rejection of claim 1 is incorporated and further Smith discloses that **work data, which is stored in the memory, is allocated to the active control software and the passive control software, work data allocated to the active control software designated as active work data and said other work data are designated as passive work data, the control computer controls the distributed system of computers using the active control software and the active work data** (col. 2 lines 25-28, “Each module is in fact two copies of the code and data-space... one of the copies, called the Primary Address Space (PAS), maintains actual state data. The other copy (is) called the Standby Address Space (SAS)).

As per claim 3, the rejection of claim 2 is incorporated and further Smith discloses that **memory comprises two memory areas allocated the control software and the work data** (col. 4 lines 7-8, “Two complete copies of the modules are loaded into independent address spaces”).

As per claim 4, the rejection of claim 3 is incorporated and further Smith discloses that **the two memory areas comprise identical control software and identical work data, and, in the event of a fault during control of the distributed computer system, the control computer switches over to and activates the passive**

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control software and the passive work data and deactivates the active control software and the active work data, to control the distributed computer system software using the passive control software and the passive work data (col. 2 lines 25-34, "Each module is in fact two copies of the code and data-space ... one of the copies, called the Primary Address Space (PAS), maintains actual state data. The other copy (is) called the Standby Address Space (SAS) ... The Availability Management Function (AMF) controls the allocation of PAS and SAS components to the processors. When the AMF detects an error, a SAS becomes PAS and the original PAS is terminated").

As per claim 7, the rejection of claim 3 is incorporated and further Smith discloses that **during re-installation of control software, the control computer continues to control** the distributed system **using the active control software** (Figure 1 shows a temporal description of the re-installation and re-configuration of the control software that occurs after a failure is detected. The temporal description shows that the re-installation and re-configuration of the software is completed in a sufficient time span as to allow for the distributed system to remain available through out the process).

As per claim 8, the rejection of claim 3 is incorporated and further Smith discloses that **during re-installation of work data, the control computer temporarily switches to the passive memory area containing the passive control software, to install a new work database** (col. 6 lines 53-55, "FIG. 3D shows what happens when

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the PAS (active control software address space) fails... (and the) SAS (passive control software address/data space) is loaded and initialized).

As per claim 9, the rejection of claim 3 is incorporated and further Smith discloses that **during a changeover from the active memory area and corresponding control software and corresponding work data to the memory area and corresponding control software and corresponding work data, the other control computer evaluates, with reference to stored control information, whether only the control software or else the work data or else a further control computer are affected by the changeover and, depending on an evaluation, automatically initiates a restoration of control of the distributed system** (col. 5 lines 52-55, "The group manager (control computer) ... coordinates the detection (and evaluation) and recovery of all failures within the group that do not require attention at a system level", other types of errors are evaluated and handled accordingly).

As per claim 11 Smith discloses a **method for operating distributed system software using a control computer, the method comprising: storing control software in a repetitive redundant manner into different memory areas of a memory within the control computer; designating control software of one memory area as an active control software; designating control software of other memory area as passive control software; controlling the distributed system by the control computer using the active control software** (col. 2 lines 25-28, "Each

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module is in fact two copies of the code (control software) and data-space... one of the copies, called the Primary Address Space (PAS), maintains actual state data. The other copy (is) called the Standby Address Space (SAS)).

As per claim 12, the rejection of claim 11 is incorporated and further Smith discloses: **storing work data in a repetitive redundant manner into the memory; allocating work data to the control software; designating work data allocated to the active control software as active work data; and designating work data being allocated to the passive control software as passive work data; wherein controlling the distributed system further comprises controlling the distributed system from the active work data** (col. 2 lines 25-28, "Each module is in fact two copies of the code and data-space (work data)... one of the copies, called the Primary Address Space (PAS), maintains actual state data. The other copy (is) called the Standby Address Space (SAS)).

As per claim 13, the rejection of claim 12 is incorporated and further Smith discloses that **in the event of a fault during control of the distributed system: activating the passive control software and the passive work data, respectively creating newly active control software and work data; deactivating the active control software and the active work data, respectively creating newly passive control software and work data; and controlling the distributed system by the control computer from the newly active control software and the newly active**

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work data (col. 2 lines 25-34, "Each module is in fact two copies of the code and data-space ... one of the copies, called the Primary Address Space (PAS), maintains actual state data. The other copy (is) called the Standby Address Space (SAS) ... The Availability Management Function (AMF) controls the allocation of PAS and SAS components to the processors. When the AMF detects an error, a SAS becomes PAS and the original PAS is terminated").

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, U.S. Patent No. 5,129,080 in view of Wei, IEEE Publication No. 0-7803-3682-8/96 (Art of Record).

As per claim 5, the rejection of claim 4 is incorporated and further Smith discloses that **the control computer switches over to and activates the passive control software and the passive work data and deactivates the active control software and the active work data** (col. 2 lines 25-34, "Each module is in fact two copies of the code and data-space ... one of the copies, called the Primary Address

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Space (PAS), maintains actual state data. The other copy (is) called the Standby Address Space (SAS) ...The Availability Management Function (AMF) controls the allocation of PAS and SAS components to the processors. When the AMF detects an error, a SAS becomes PAS and the original PAS is terminated").

Smith doesn't explicitly disclose **a menu-driven operating intervention**.

However, Wei, in an analogous environment, discloses **a menu-driven operating intervention** (section 3.1.4, lines 7-9, "From such a GUI, a network administrator will be able to perform configuration, connection and fault management activities").

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to incorporate the teachings of Wei into the system of Smith to have a menu-driven operating intervention. The modification would have been obvious because one of ordinary skill in the art would want to use a menu-driven interface in order have an interface that is easy to understand and use.

As per claim 10, the rejection of claim 2 is incorporated and further Smith doesn't explicitly disclose that the **control computer comprises an input device to enter control information which designates control software and work data to individual memory areas of the memory to be either active or passive**.

However, Wei, in an analogous environment discloses that **the control computer comprises an input device to enter control information which designates control software and work data to individual memory areas of the**

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memory to be either active or passive (section 3.1.4, lines 7-9, "From such a GUI, a network administrator will be able to perform configuration, connection and fault management activities").

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to incorporate the teachings of Wei into the system of Smith to have an input device to enter control information. The modification would have been obvious because one of ordinary skill in the art would want to give users of the system a way of controlling and/or optimizing the system by using an input device to enter control information.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, U.S. Patent No. 5,129,080 in view of Oono, U.S. Patent No. 5,548,710.

As per claim 6, the rejection of claim 4 is incorporated and further Smith doesn't explicitly disclose that **the control computer temporarily transfers to a pause condition before switching over to the passive control software and the work data.**

However, Oono, in an analogous environment discloses that **the control computer temporarily transfers to a pause condition before switching over to the control software and the work data** (col. 14 lines 31-36, "upon occurrence of trouble in said active ISDN communication adapter, (the control computer transfers to an) ... interruption of transmission (a pause condition), ... and (then) activating said stand-by ISDN communication adapter to operate as the active ISDN communication adapter").

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to incorporate the teachings of Oono into the system of Smith to have the control computer transfer to a pause condition before switching over to the previously passive control software. The modification would have been obvious because one of ordinary skill in the art would want to pause before switching in order to be certain that all of the effects of the error are apparent to the system before beginning error recovery.

Response to Arguments

Applicants arguments filed on 6/21/04 have been considered but they are not persuasive.

In the remarks, the applicant has argued substantially that:

- 1) Smith does not disclose or suggest a single control computer including memory having memory areas, one of the memory areas including active control software and the other of the memory areas including passive control software, on p. 12 ¶2:1-4.

Examiner's response:

- 1) The examiner disagrees with the applicant's characterization of the applied art. While the applied art does describe multiple computers with multiple memory areas, the computers and memory areas function as one computer system, with the availability management function acting as the control computer, "controlling allocation of PAS (active control software) and SAS (passive control software) components to the

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(different memory locations of the system)", Smith col. 2:31-33. Further, performing an identical routine in a singular computing environment, as opposed to a distributed system computing environment would not distinguish the instant application over the prior art.

In the remarks, the applicant has argued substantially that:

2) Smith teaches away from a single control computer having memory, containing both the a PAS and a SAS, on p. 12, ¶ 4:1-5.

Examiner's response:

2) The applicant has quoted col. 5:40-43, where Smith discloses that "the only constraint imposed by the invention is that the PAS and SAS of any single OU must be in two different processors if processor failures are to be guarded against". However, Smith also discloses the desire to guard against software failures ("There are many contributors to high operational availability: (1) failures in both the hardware and the software system ... and that failures in the software must not ... adversely affect operational use of the system", at col. 1:20-31). Therefore, one of ordinary skill in the art would clearly find the suggestion to use the Smith system to provide redundant software availability on singular and distributed computer system.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. After October 25, 2004, the examiner can be reached at new telephone number (571) 272-3697, and the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695.

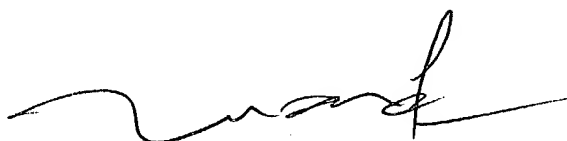
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andre R. Fowlkes whose telephone number is (703)305-8889. The examiner can normally be reached on Monday - Friday, 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (703)305-4552. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARF



TUAN DAM
SUPERVISORY PATENT EXAMINER